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SECTION 1 - INTRODUCTION

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1.01 Purpose

This Report was prepared for Syracuse China Corporation. It presents the findings of the Preliminary Hydrogeologic Site Assessment performed at the company's industrial landfill, located immediately north of its 2900 Court Street facility in Syracuse, New York (Figure 1). The data obtained from the Preliminary Hydrogeologic Site assessment have been used to:

1. Provide a preliminary characterization of the landfill and the quality of the ground water and the surface water associated with the landfill.
2. Evaluate the horizontal and vertical extent and chemical characteristics of the waste water treatment sludge disposed at the landfill.
3. Evaluate the presence of polychlorinated biphenyls (PCBs) in soils used to construct a berm around the western perimeter of the landfill.

The results of this assessment will provide a basis to evaluate whether Syracuse China will close the landfill or apply for a landfill permit.

1.02 Background

The site has been used by Syracuse China Corporation as an industrial landfill since approximately 1940. The public had open access to the landfill until it was fenced in the late 1960s or early 1970s. Although no records exist, the public occasionally left some refuse materials in the landfill over the years. In addition, contractors for the City of Syracuse, Town of Salina, and Town of Dewitt were allowed to deposit road fill and materials cleared from storm sewer catch basins in the landfill.

The landfill can be divided into two separate areas; the upper portion or western half of the landfill and the lower portion or the eastern half of landfill (Figure 2). The

upper portion of the landfill represents the oldest area of the landfill and reportedly contains mostly bisque, gypsum molds, broken china, waste water treatment sludge, cement, and construction debris. The lower portion of the landfill contains mostly bisque, gypsum molds, broken china, refractory material, and waste water treatment sludge.

The landfill has two principal settling ponds and two secondary settling ponds (Figure 2). Plant effluent water is discharged to the principal Settling Ponds 1 and 2. Amerfloc 482 manufactured by Drew Chemical Corporation is continuously added to the waste stream prior to discharge to Settling Pond 1. Amerfloc acts as a flocculant which causes the suspended solids to settle. Secondary Settling Ponds 3 and 4 are used for approximately 1 week in the spring of the year when Settling Ponds 1 and 2 become filled with waste water treatment sludge and are excavated (Figure 2). Adjacent to Settling Pond 1 is a Sludge Pond where the sludge from Settling Pond 1 and Settling Pond 2 is placed. The material in the Sludge Pond is allowed to dry and is then disposed of on the landfill. The solids in the effluent are primarily clay, glass, and glaze process waste which accumulates at a rate of approximately five tons/day.

Syracuse China holds a SPDES permit (NY 010-0137) to discharge the water to Ley Creek. Samples of the treated plant effluent have been collected on a regular basis by Syracuse China and analyzed by Upstate Laboratories Inc. as required by Syracuse China's SPDES permit.

Table 1 presents an analytical summary of samples collected from treated waste water, untreated waste water, and sludge and sediment since February 1986. Analytical results of samples collected in 1986 had shown levels of arsenic, barium, and lead above detection limits (Table 1). Analytical results collected in 1988 showed concentrations of arsenic, barium, lead and mercury above detection limits (Table 1). In June 1989, there was a finding of 5.5 ppm of lead (EP Toxicity Method) in a sediment sample taken at a point prior to entry to Settling Pond 1.

In September 1989, Upstate Laboratories analyzed samples of untreated plant effluent, waste water treatment sludge, and treated plant effluent to further evaluate the presence of lead. Some of these samples were also analyzed for EP toxicity metals. Results of the EP toxicity tests conducted on sludge samples collected from the sludge pond (Figure 2), in September 1989 indicated that three of the four sludge samples had EP toxicity values in excess of 5 ppm for lead (Table 1). The two samples from the north end of the sludge pond had EP Toxicity lead values of 7.0 ppm and 3.7 ppm, while the two samples from the south end of the sludge pond had EP toxicity lead values of 6.4 ppm and 9.0 ppm (Table 1).

In addition, a recent review of plant records indicated that materials used to construct a berm around the western perimeter of the landfill were reportedly obtained from Ley Creek dredged soils (Figure 2). Some of the soil in Ley Creek is known to be contaminated with PCBs (EDI, 1985).

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SECTION 5 - CONCLUSIONS & RECOMMENDATIONS

Based upon information from the Preliminary Hydrogeologic Site Assessment described herein, the following conclusions and recommendations are presented.

5.01 Conclusions

1. A magnetometer survey conducted over a 400 ft by 550 ft grid on the older portion of the landfill, indicated the presence of several small magnetic anomalies. The anomalies could be due to barrels, steel rebar, or other ferrous objects.

2. The geology at the site is characterized by glaciolacustrine deposits comprised of silt, clay, fine sand, and occasional gravel. A layer of a dense reddish brown till occurs within the glaciolacustrine layer.

3. The depth to ground water across the site varies from approximately 14 ft beneath the surface at MW-1 to near the ground surface at MW-2, MW-3, MW-4, and MW-5. This variation is largely due to topographic changes across the site. Ground water elevation data indicate that ground water flow is to the north, towards Ley Creek. However, a ground water mound may exist beneath the landfill resulting in some degree of radial flow from the landfill.

4. The ground water quality data indicates Volatile Organic Compounds (VOCs) were not found above detection limits. Dissolved metals analyzed only indicated 0.07 ppm of lead at MW-2. Dissolved metals at other ground water monitoring wells were not detected. The results of the surface water analyses indicate that dissolved metals and volatile organic compounds were not detected except at SW-3. At SW-3, 1,1,1-trichloroethane and 1,1-

dichloroethane were detected at concentrations below the New York State Surface Water Guidance Values.

5. The EP toxicity lead results of six test borings completed in the vicinity of settling ponds indicate that the waste water treatment sludge subsurface samples collected from B-1, B-2, and B-6 exceeded the 5 mg/l threshold for characteristic hazardous waste. At B-5, two of three sludge samples analyzed also exceeded the EP toxicity lead threshold. Subsurface samples collected from B-3 and B-4 did not exceed the threshold. One of two samples of waste water treatment sludge taken along the western portion of the site was in excess of the EP Toxicity lead threshold (SSL-2).

6. The analytical results of soil samples collected from the berms constructed of Ley Creek sediments did not detect PCBs.

5.02 Recommendations

1. Prepare to close the landfill. Arrange to meet with NYSDEC to discuss this report and the landfill closure.

2. Further investigate the chemical characteristics and extent of waste water treatment sludge.

3. Collect a second round of ground water and surface water samples for analyses of volatile organic compounds and metals analyses to confirm the results of the previous sampling effort.